	Greenwich. (miles)	Mt. Hamilton. (miles)	Washington. (miles)
Equatorial diameter of Saturn ...	76,190	76,150	76,050
Polar diameter of Saturn	72,066	69,980	...
Outer diameter of Outer Ring ...	174,190	172,730	173,590
Inner diameter of Outer Ring ...	149,640	149,620	149,990
Outer diameter of Inner Ring ...	145,170	144,830	146,380
Inner diameter of Inner Ring ...	110,060	109,530	110,500
Inner diameter of Crape Ring ...	89,110	88,990	88,060
Width of Cassini's Division ...	2,240	2,400	1,800
Width of Outer Ring	12,270	11,560	11,800
Width of Inner Ring	17,560	17,650	17,940
Width of Crape Ring	10,220	10,270	11,260

The agreement of the Greenwich, Mount Hamilton, and Washington results is very satisfactory, except in the case of the polar diameter, of which a comparatively small number of measures were made at Greenwich. If the low declination of the planet permits, it is intended to supplement these by more measures of the polar diameter at the next opposition.

Meridian Observations of Sirius and Procyon at the Royal Observatory, Greenwich, 1836–1894. By W. G. Thackeray.

In reducing a long series of observations such as the above to a common epoch, it is very essential to make the reductions on as homogeneous a system as possible, a matter of no little difficulty and trouble.

The following right ascensions were made with the transit instrument from 1836–1850, and with the transit circle from 1851–1894.

The difficulty of adjusting the observed right ascensions of stars to a fixed point—the point where the Sun crosses the Equator at the spring equinox—has been met by correcting the adopted places of those stars which have been used to ascertain the errors of the transit clock in accordance with the quantities given annually in the "Greenwich Observations" under the section of discussions of the position of the Ecliptic—a correction which for brevity we may refer to as the correction to the equinox. The opportunity for making such a correction has always been chosen at the time of making one of the periodical catalogues, and reference to the introduction to any of these catalogues will show the method observed.

In this investigation the equinox of the 1880 catalogue has been adopted as the standard of reference in forming the adopted right ascensions for 1890.

The following table gives the necessary corrections and the

data on which they are founded. The first column, (1), gives the years corresponding to the various catalogues. The second column, (2), gives the authority for the places of the clock-star list as adopted in the reductions. For instance, in 1836 the authority was a catalogue of star places given in the *Nautical Almanac* for 1834, 2nd edition; and this catalogue as corrected by quantities given in the introductions to the "Greenwich Observations" was used till 1843, when the places of the Greenwich 1840 Catalogue were used; and these were used until 1849, when the places of the Greenwich 1845 Catalogue were used, and so on. The third column, (3), gives the corrections that are required to bring the clock-star system used in the reductions of different years to a uniform system for each catalogue. Column (4) gives the apparent correction to the equinox for the series of years forming the catalogue from the observation of the Sun as depending on the system of clock stars used for each year's reductions. Column (5) is the mean of the corrections taking column (4)–column (3) for each catalogue. Column (6) gives the correction to the equinox for each year after the clock stars have been reduced to a uniform system, and is the sum of columns (5) and (3). Column (7) is the mean of the corrections in column (6) for the series of years forming the different catalogues, and which may be taken as the systematic catalogue correction to the adopted clock-star places. Column (8) is the correction to the various catalogues to reduce them to the adopted equinox of the 1880 catalogue, and column (9), which is the sum of (6) and (8), gives the correction required to reduce the mean right ascensions of each individual year to the equinox of the 1880 catalogue—that is to say, what the observed right ascension would have been had the standard right ascensions of the Ten-year Catalogue 1880 been used throughout as the authority for the annual clock-star lists, always assuming the validity of the so-called correction to the equinox.

Corrections required to reduce Mean Right Ascensions of the Annual Catalogues of the Greenwich Observations to the Equinox of the 1880 *Catalogue.*

TABLE I.

Year.	Authority for Clock-Star List.	Correction to adopted Clock-Star System.	Apparent Correction to Equinox.	Assumed Correction to Equinox.	Adopted Correction to Equinox for Annual Mean R.A.'s.	Resulting Mean Correction to Catalogue.	Correction to reduce Catalogues to Equinox of 1880 Cat.	Correction to reduce Annual Mean R.A.'s to Equinox of 1880 Cat.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		s	s	s	s	s	s	s
1836	Catalogue in	+ ·029	−·130		−·081			−·052
1837	N.A. 1834,	+ ·034	−·048		−·076			−·047
1838	2nd edition,	+ ·024	−·137		−·086			−·057
1839	corrected by quantities	+ ·025	−·074	−·110	−·085	−·084	+·029	−·056
1840	given in introductions	+ ·022	−·089		−·088			−·059
1841	to Greenwich observations	+ ·020	−·026		−·090			−·061

Year.	Authority for Clock-Star List.	Correction to adopted Clock-Star System.	Apparent Correction to Equinox.	Assumed Correction to Equinox.	Adopted Correction to Equinox for Annual Mean R.A.'s.	Resulting Mean Correction to Catalogue.	Correction to reduce Catalogues to Equinox of 1880 Cat.	Correction to reduce Annual Mean R.A.'s to Equinox of 1880 Cat.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		s	s	s	s	s	s	s
1842		+ ·022	−·061		−·021			−·076
1843	1840 Cat.	+ ·111	+·101		+·068			+·013
1844		+ ·099	+·010	−·043	+·056	+·045	−·055	+·001
1845		+ ·120	+·093		+·077			+·022
1846		+ ·081	+·087		+·038			−·017
1847		+ ·093	+·037		+·050			−·005
1848		+ ·062	+·186		+·072			+·062
1849	1845 Cat.		−·038		+·010			000
1850			−·064	+·010	+·010	+·020	−·010	000
1851			−·019		+·010			000
1852			+·033		+·010			000
1853			+·022		+·010			000
1854		+0·009	+·061		000			+·010
1855		+0·009	−·011		000			+·010
1856	1850 Cat.		−·068		−·010			000
1857			−·016	−·010	−·010	−·007	+·010	000
1858			−·025		−·010			000
1859			+·044		−·010			000
1860			−·019		−·010			000
1861		000	−·001					
1862	1860 Cat.		−·005					
1863			+·008					
1864			−·002	−·010	−·010	−·010	+·003	−·007
1865			−·010					
1866			−·006					
1867			−·051					
1868		000	−·050					
1869		000	−·001					
1870	1864 Cat.		−·012					
1871			+·044					
1872			−·019	+·007	+·007	+·007	−·007	000
1873			+·058					
1874			−·049					
1875			+·038					
1876			+·055					

Year.	Authority for Clock-Star List.	Correction to adopted Clock-Star System.	Apparent Correction to Equinox.	Assumed Correction to Equinox.	Adopted Correction to Equinox for Annual Mean R.A.'s.	Resulting Mean Correction to Catalogue.	Correction to reduce Catalogues to Equinox of 1880 Cat.	Correction to reduce Annual Mean R.A.'s to Equinox of 1880 Cat.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		s	s	s	s	s	s	s
1877		+ ·013	+ ·044		+ ·013			+ ·013
1878	1872 Cat.		− ·049					
1879			+ ·025					
1880			− ·092					
1881			− ·035					
1882			− ·027	000	000	+ ·000		000
1883			− ·002					
1884			+ ·084					
1885			− ·009					
1886			+ ·094					

The observations of north polar distances were made with the Jones and Troughton Circles for the years 1836–39, with the Troughton Circle 1840–47, with the Troughton and Jones Cape Circle for the year 1848, with the Troughton Circle for the years 1849–50, and with the Transit Circle 1851–94.

For the years 1836–47 the position of these circles was 0″·07 N. of the Transit Circle; 1848–50 the Troughton Circle was 0″·04 S. of the Transit Circle. See "Systematic Errors of the Greenwich Transit Circle," by W. H. M. Christie, *Memoirs R.A.S.* vol. xiv. pp. 156, 157.

The north polar distances for the years 1836–47 have been corrected to colatitude 21″·83; those of 1849–50 to colatitude 21″·94, and those of 1851–94 to colatitude 21″·90.

The following table (II.) exhibits the corrections which are necessary to be applied to the results of each year's observations, as given in the various annual catalogues of Greenwich observations, to reduce the observations of 1836–50 to Bessel's refractions and colatitude of the present Greenwich Transit Circle, 38° 31′ 21″·90, and the Transit Circle observations to the following system:—

Flexure = 0″·00.
Bessel's refractions (*Tabulæ Regiomontanæ*).
Colatitude 38° 31′ 21″·90.
Formula of $R - D = a + b \sin z$.

In addition, corrections have also been applied to the results of the years 1868–76 for the wear of the microscope micrometer screws.

No corrections have been applied for Dr. Chandler's latitude variation.

TABLE II.

Corrections required to reduce Mean North Polar Distances of Sirius and Procyon in Annual Catalogues of the Greenwich Observations to a uniform system.

	Sirius.				*Procyon.*			
Year.	Colatitude 21″·90 and Bessel's Refractions.	Flexure ·00 R−D $a+b$ sin z.	Wear of Microscopes.	Sum.	Colatitude 21″·90 and Bessel's Refractions.	Flexure ·00 R−D $a+b$ sin z	Wear of Microscopes.	Sum.
	″	″	″	″	″	″	″	″
1836–38	−0·10	...	...	−0·10	−0·10	...	...	−0·10
1839	+0·16	...	...	+0·16	+0·16	...	...	+0·16
1840	+0·13	...	...	+0·13	+0·13	...	...	+0·13
1841–48	+0·03	...	...	+0·03	+0·03	...	...	+0·03
1849–50	+0·14	...	...	+0·14	+0·14	...	...	+0·14
1851–53	+0·10	...	...	+0·10	+0·10	...	...	+0·10
1854–60	−0·10	...	...	−0·10	−0·10	...	...	−0·10
1861	+0·10	...	...	+0·10	+0·10	...	...	+0·10
1862	+0·10	−0·34	...	−0·24	+0·10	−0·10	...	0·00
1863	+0·10	−0·40	...	−0·30	+0·10	−0·16	...	−0·06
1864	+0·10	−0·29	...	−0·19	+0·10	−0·10	...	0·00
1865	+0·10	−0·50	...	−0·40	+0·10	−0·16	...	−0·06
1866	+0·10	+0·52	...	+0·62	+0·10	+0·16	...	+0·26
1867	+0·10	+0·38	...	+0·48	+0·10	+0·14	...	+0·24
1868	+1·04	+0·60	+0·13	+1·77	+0·62	+0·20	0·00	+0·82
1869	+1·04	+0·53	+0·15	+1·72	+0·62	+0·20	+0·03	+0·85
1870	+1·04	+0·47	+0·04	+1·55	+0·62	+0·17	−0·05	+0·74
1871	+1·04	+0·47	+0·26	+1·77	+0·62	+0·17	+0·04	+0·83
1872	+1·04	+0·36	−0·08	+1·32	+0·62	+0·13	−0·04	+0·71
1873	+1·04	+0·40	+0·30	+1·74	+0·62	+0·14	−0·01	+0·75
1874	+1·04	+0·37	...	+1·41	+0·62	+0·13	...	+0·75
1875	+1·04	+0·21	...	+1·25	+0·62	+0·07	...	+0·69
1876	+1·04	+0·24	...	+1·28	+0·62	+0·08	...	+0·70
1877–94	...	...	...	0·00	...	...	...	0·00

The following table (III.) gives the mean observed right ascensions and north polar distances of *Sirius*, as taken from the annual catalogues of the Greenwich observations reduced to 1890 by the use of Peters' constants of precession, and corrected, by Tables I. and II., with (*a*) Professor Auwers' proper motions $-0^{s}\cdot0372$ and $+1''\cdot199$, and (*b*) corrected proper motion in N.P.D. of $+1''\cdot229$.

The following diagrams exhibit the finally adopted places for 1890, first of all compared with orbital corrections given by

Professor Auwers in the *Astr. Nachr.* No. 3085 ; and secondly, as corrected by the same quantities. And assuming that these latter are correct, then the Greenwich observations appear to show that a correction of + 0″·030 should be applied to Professor Auwers' value of the proper motion in N.P.D.

TABLE III.

Mean Right Ascensions and North Polar Distances of Sirius reduced to 1890·0, *with Peters' Constants of Precession and* (*a*) *Auwers' Proper Motion,* (*b*) *Corrected Proper Motion in N.P.D.*

Year and fraction of year.	Mean Right Ascension.	No. of Obs.	Adopted Seconds of R.A. 1890·0.	Year and fraction of year.	Mean North Polar Distance.	No. of Obs.	Adopted Seconds of N.P.D. 1890·0. (*a*)	Adopted Seconds of N.P.D. 1890·0. (*b*)
	h m s		s		° ′ ″		″	″
1836·36	6 37 55·340	23	18·060	1836·31	106 29 48·91	28	57·48	59·10
1837·43	58·030	17	·110	1837·50	53·94	131	58·02	59·61
1838·34	38 0·660	21	·090	1838·44	58·19	30	57·77	59·33
1839·31	3·360	26	·150	1839·46	30 1·55	22	56·87	58·41
1840·25	6·010	30	·130	1840·48	6·22	17	57·00	58·50
1841·31	8·630	12	·100	1841·36	11·11	6	57·26	58·73
1842·39	11·320	32	·130	1842·45	14·77	11	56·38	57·82
1843·43	13·930	16	·180	1843·45	18·15	13	55·24	56·65
1844·50	16·510	13	·100	1844·49	22·49	9	55·06	56·44
1845·31	19·140	17	·110	1845·43	26·34	10	54·37	55·72
1846·29	21·770	27	·050	1846·40	31·05	10	54·54	55·86
1847·26	24·360	22	·010	1847·44	35·64	5	54·57	55·86
1848·30	27·030	27	·130	1848·39	40·12	11	54·82	56·08
1849·40	29·680	38	·080	1849·36	44·84	23	54·90	56·13
1850·32	32·330	21	·080	1850·31	50·23	25	55·65	56·85
1851·31	34·970	24	·070	1851·29	53·41	27	54·14	55·31
1852·30	37·600	29	·060	1852·30	58·54	26	54·62	55·76
1853·21	40·210	7	18·030	1853·26	31 3·34	8	55·74	56·85
1854·33	42·800	13	17·990	1854·37	8·04	15	54·97	56·05
1850·32	45·490	15	18·030	1855·37	12·61	16	54·97	56·02
1856·42	48·130	9	18·010	1856·42	17·46	9	55·24	56·26
1857·38	50·710	13	17·950	1857·39	23·00	12	56·20	57·19
1858·50	53·290	10	·890	1858·45	28·12	9	56·73	57·69
1859·34	55·990	11	·950	1859·34	32·05	11	56·07	57·00
1860·45	58·610	7	·920	1860·39	37·30	6	56·73	57·63
1861·38	39 1·240	9	·910	1861·44	40·75	8	55·89	56·76
1862·88	6 39 3·880*	2	·910	1862·57	106 31 47·21*	2	57·28	58·12

* One observation in this year's result has been rejected.

1895MNRAS..56...22T

Right Ascensions of Sirius observed at the Royal Observatory, Greenwich 1836-1894 reduced to 1890 with Auwers' proper motion, compared with Auwers' corrections for orbital motion Astronomische Nachrichten No 3085.

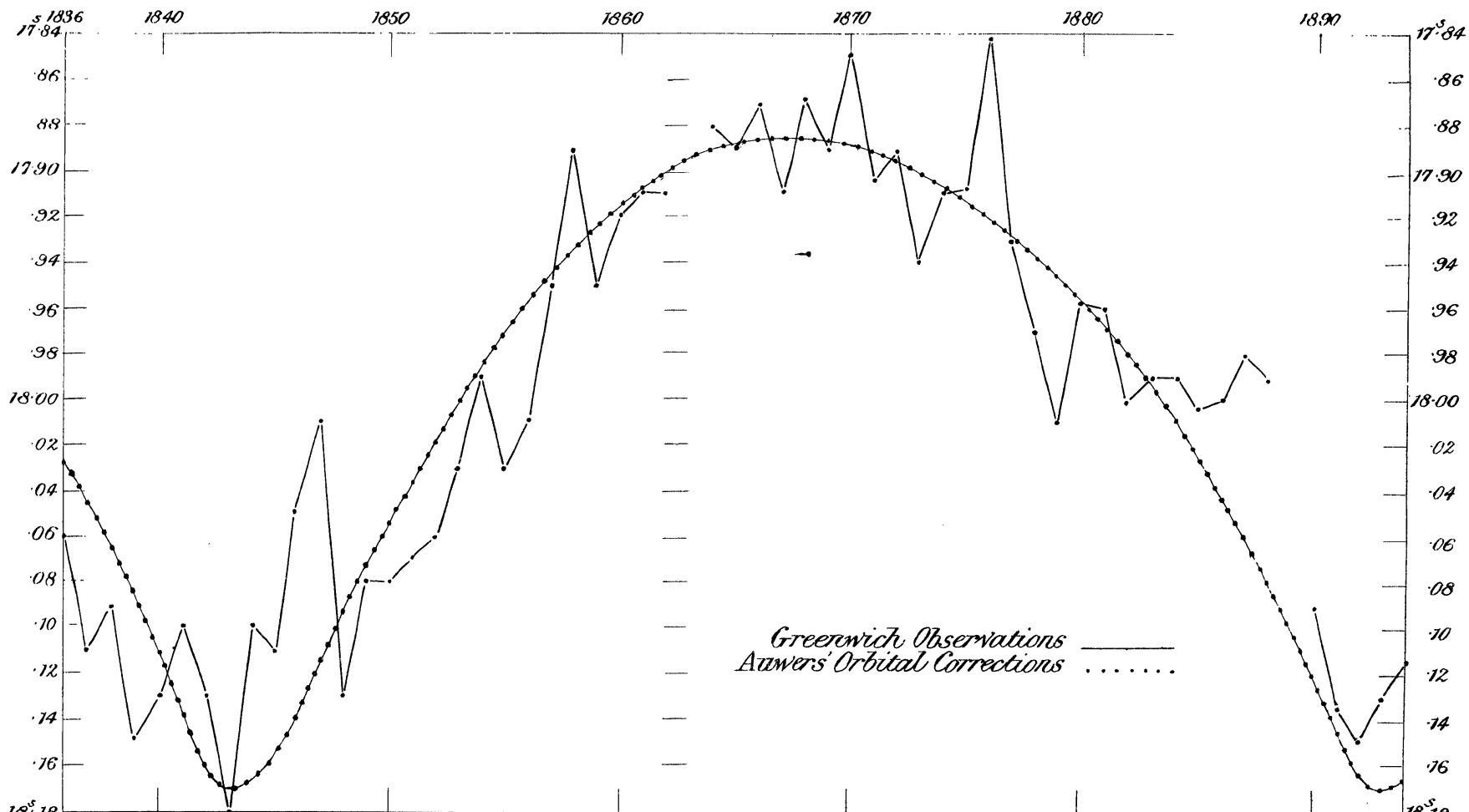


DIAGRAM (I)

1895MNRAS..56...22T

North Polar Distances of Sirius observed at the Royal Observatory, Greenwich 1836-1894 reduced to 1890 with (a) Auwers' Proper motion +1".199; (b) adopted proper motion + 1".229; compared with Auwers's corrections for orbital motion (Ast. Nach. N°. 3085.)

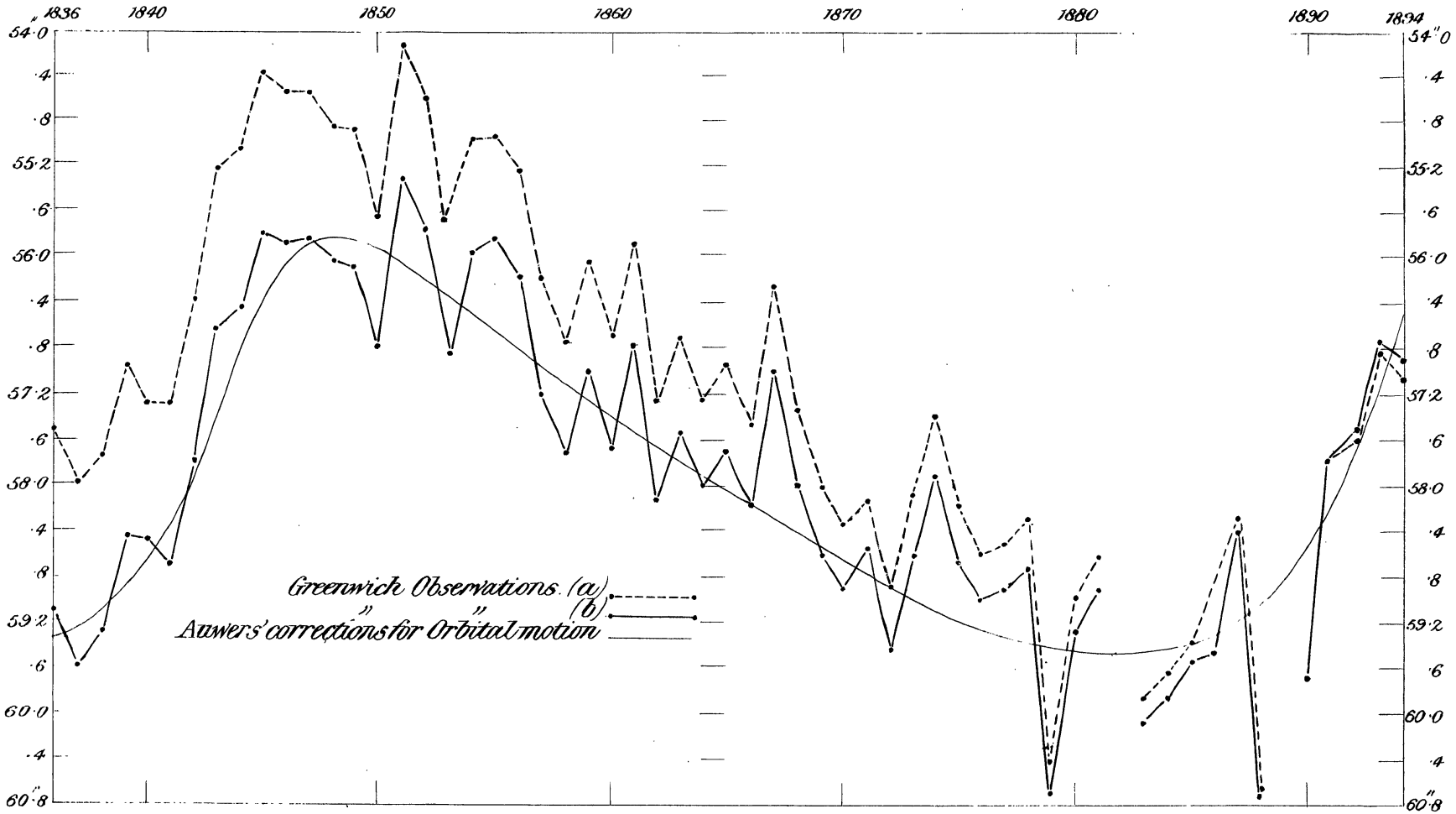


DIAGRAM (2).

Right Ascensions of Sirius observed at the Royal Observatory, Greenwich 1836 1894. reduced to 1890 with Auwers' correction for linear and orbital motions.

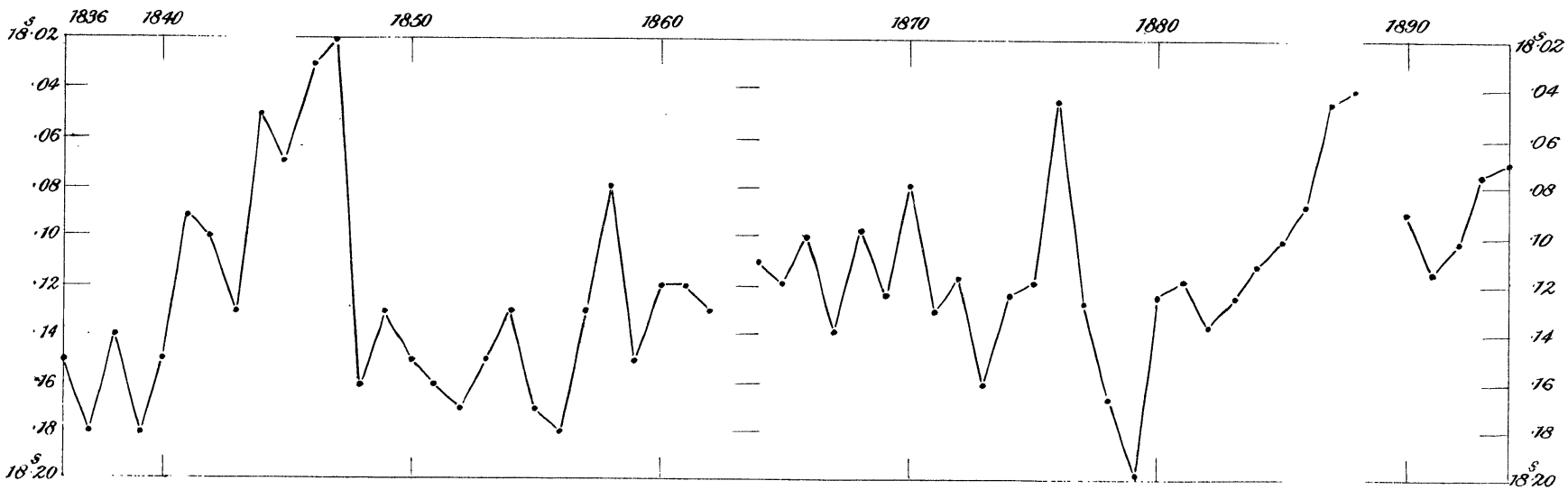
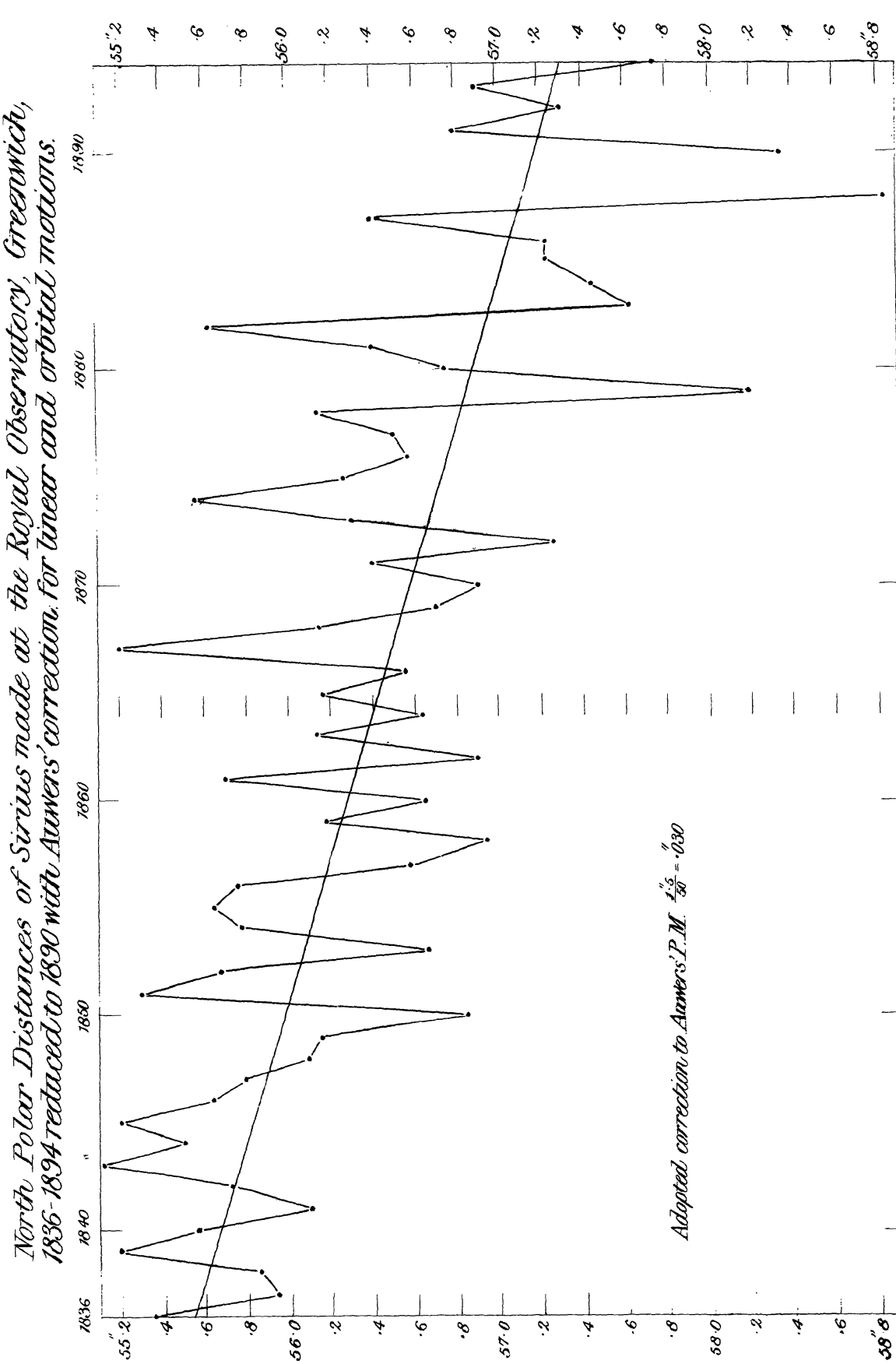


DIAGRAM (3)



Year and fraction of year.	Mean Right Ascension.	No. of Obs.	Adopted Seconds of R.A. 1890·0.	Year and fraction of year.	Mean North Polar Distance.	No. of Obs.	Adopted Seconds of N.P.D. 1890·0. (*a*)	(*b*)
	h m s		s		° ′ ″		″	″
1863·00	6 39 ...	...	...	1863·83	106 31 51·28	1	56·70	57·51
1864·29	9·140	18	·880	1864·28	56·34	15	57·26	58·04
1865·27	11·800	18	17·890	1865·27	32 0·83	18	56·93	57·68
1866·38	14·420	13	17·870	1866·38	4·95	13	57·46	58·18
1867·47	17·100	6	·910	1867·43	9·50	7	56·26	56·95
1868·52	19·710	8	·866	1868·51	12·85	9	57·33	57·99
1869·46	22·380	3	·893	1869·45	18·22	6	58·01	58·64
1870·44	24·980	7	·849	1870·44	23·35	7	58·33	58·93
1871·49	27·730	6	·905	1871·49	27·37	6	57·93	58·50
1872·41	30·310	3	·891	1872·41	33·43	3	58·90	59·44
1873·70	33·005	4	·942	1873·70	38·85	4	58·10	58·61
1874·48	35·615	4	·908	1874·47	41·12	5	57·40	57·88
1875·21	38·258	8	·907	1875·26	46·71	6	58·19	58·64
1876·59	40·836	5	·842	1876·43	51·72	5	58·59	59·01
1877·15	43·560	4	·929	1877·15	57·66	4	58·57	58·96
1878·51	46·253*	4	17·979	1878·50	33 2·05*	4	58·30	58·66
1879·31	48·937	3	18·020	1879·31	8·82	3	60·39	60·72
1880·31	51·516	5	17·955	1880·31	12·08	5	58·98	59·28
1881·19	54·165	2	17·959	1881·19	16·42	2	58·65	58·92
1882·97	56·850	1	18·003	1882·97	(20·29)	1	(57·88)	(58·12)
1883·14	59·486	5	17·993	1883·13	26·99	13	59·88	60·09
1884·11	40 2·130	1	17·993	1884·11	31·47	2	59·68	59·86
1885·35	4·785	4	18·005	1885·47	35·82	3	59·38	59·53
1886·13	7·426	5	18·002	1886·15	40·44	5	59·32	59·44
1887·13	10·050	½	17·981	1887·13	44·16	1	58·28	58·37
1888·04	12·705	2	17·993	1888·04	51·27	2	60·69	60·75
1889	...	...	...	1889	...	...	...	...
1890·12	18·087	3	18·087	1890·09	59·73	2	59·73	59·73
1891·16	20·780	2	·136	1891·16	34 2·47	2	57·76	57·73
1892·71	23·438	4	·150	1892·71	6·99	4	57·55	57·49
1893·21	26·059	14	·127	1893·21	10·98	17	56·85	56·76
1894·42	6 40 28·690	5	·114	1894·42	106 34 15·86	5	57·06	56·94

After applying Professor Auwers' corrections for linear and orbital motions, and giving equal weights to the result of each year's observations, the mean right ascension and north polar dis-

tance of *Sirius* for 1890·0 are $6^h\ 40^m\ 18^s{\cdot}118$ and 106° 33′ 57″·18, and with the corrected proper motion in N.P.D. 106° 33′ 58″·00.

The following table (IV.) gives the mean right ascensions and north polar distances of *Procyon* as taken from the annual catalogues of Greenwich observations reduced to 1890, by the use of Peters' constants of precession, and corrected by Tables I. and II., with Professor Auwers' proper motions of $-0^s{\cdot}0474$ and $+1''{\cdot}027$. The following diagrams exhibit the finally adopted places for 1890, first of all compared with the corrections for orbital motion given by Professor Auwers in *Astr. Nachr.*, Nos. 1371–2–3; and secondly, as corrected by the same quantities.

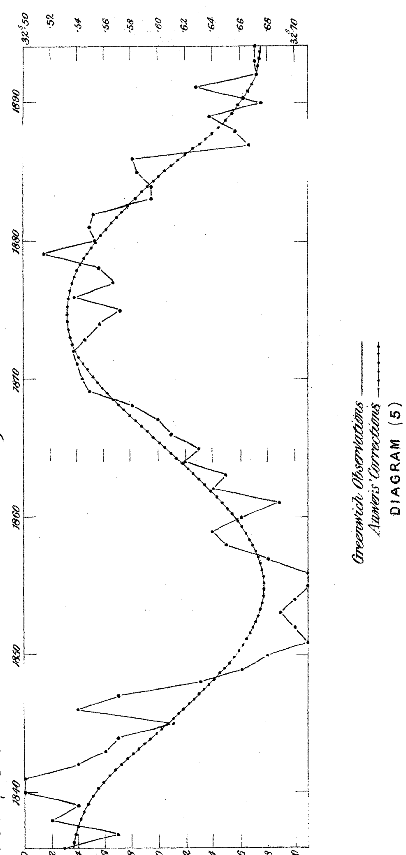
After applying Professor Auwers' corrections for linear and orbital motions, and giving equal weights to the result of each year's observations, the mean right ascension and north polar distance for 1890·0 are $7^h\ 33^m\ 32^s{\cdot}605$ and 84° 29′ 36″·98.

TABLE IV.

Mean Right Ascensions and North Polar Distances of Procyon reduced to 1890·0 *with Peters' constants of Precession and Auwers' proper motion.*

Year and Fraction.	Mean Right Ascension.	No. of Obs.	Adopted Seconds of R.A. 1890.	Year and Fraction.	Mean North Polar Distance.	No. of Obs.	Adopted Seconds of N.P.D. 1890.
	h m s		s		° ′ ″		″
1836·30	7 30 42·770	27	32·530	1836·33	84 21 38·30	12	37·31
1837·38	45·950	27	·570	1837·62	46·20	12	36·46
1838·28	49·060	24	·520	1838·47	55·29	22	36·79
1839·32	52·220	17	·540	1839·43	22 3·60	13	36·59
1840·30	55·350	25	·500	1840·62	11·10	6	35·18
1841·25	58·500	17	·500	1841·29	21·74	8	37·03
1842·40	31 1·680	33	·540	1842·41	28·95	10	35·49
1843·41	4·760	21	·560	1843·38	38·25	9	36·01
1844·41	7·930	25	·570	1844·44	46·94	7	35·91
1845·34	11·090	23	·610	1845·54	55·94	6	36·11
1846·31	14·210	20	·540	1846·23	23 3·88	11	35·24
1847·39	17·370	31	·570	1847·40	14·04	4	36·59
1848·37	20·510	32	·630	1848·23	21·60	13	35·48
1849·31	23·740	25	·660	1849·35	30·33	12	35·44
1850·30	26·910	30	·680	1850·24	39·94	18	36·16
1851·42	30·090	28	·710	1851·41	48·96	24	36·28
1852·28	33·220	44	·700	1852·27	58·14	33	36·56
1853·22	36·360	7	·690	1853·19	24 6·75	1	36·27
1854·31	39·500	28	·700	1854·38	16·23	21	36·96
1855·35	42·650	20	·710	1855·35	25·43	19	37·32
1856·32	7 31 45·800	12	·710	1856·40	84 24 34·15	14	37·19

Right Ascensions of Procyon made at the Royal Observatory, Greenwich 1836 - 1894 reduced to 1890 with Auwers Proper Motion, compared with Auwers's corrections for orbital motion (Astronomische Nachrichten Nos. 3371-2-3.)



North Polar Distances of Procyon made at the Royal Observatory, Greenwich 1836-1894 reduced to 1890·0 with Auwers' Proper Motion compared with Auwers' corrections for orbital motion Astronomische Nachrichten Nos 1371-2-3.

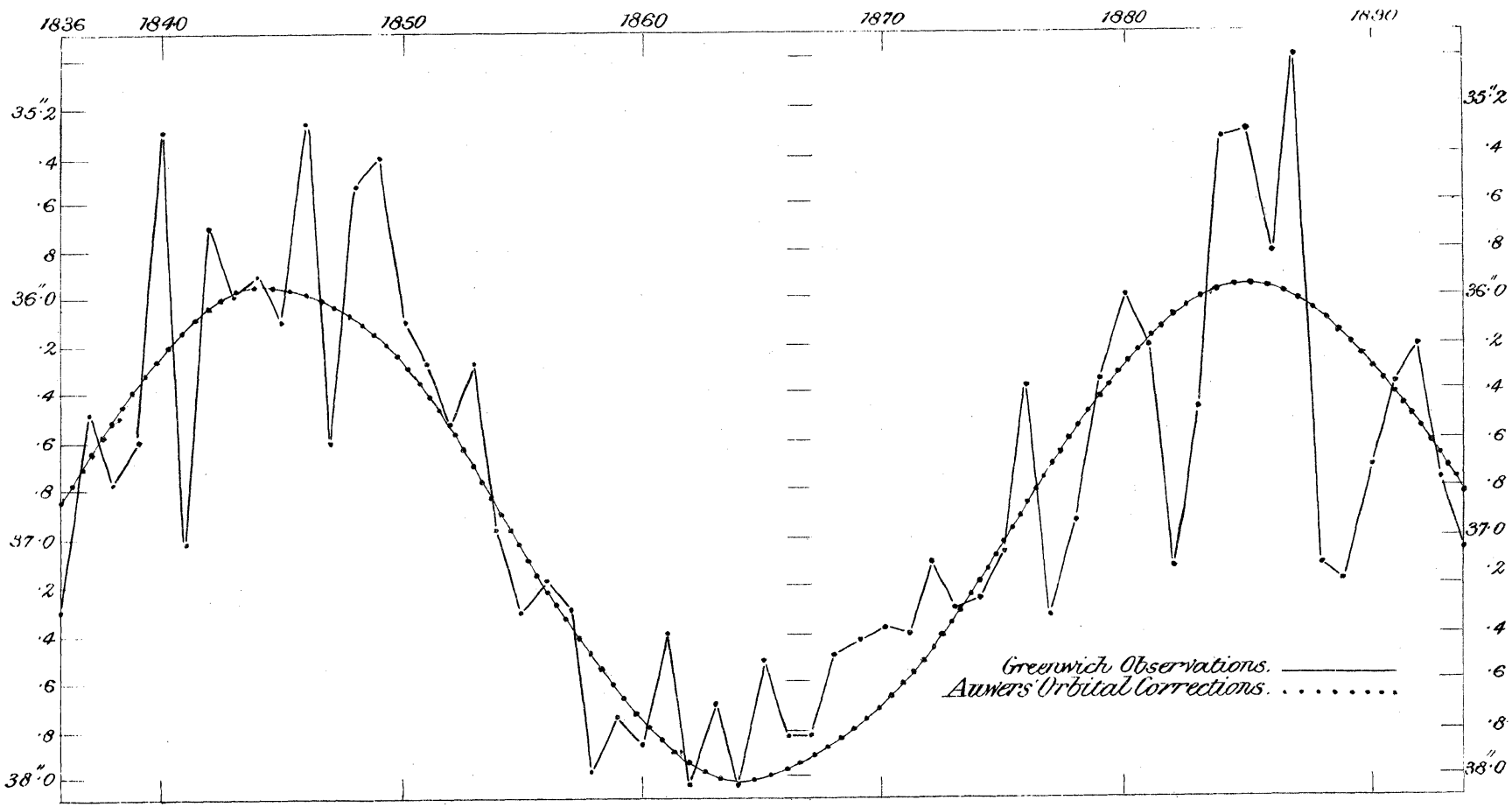


DIAGRAM (6)

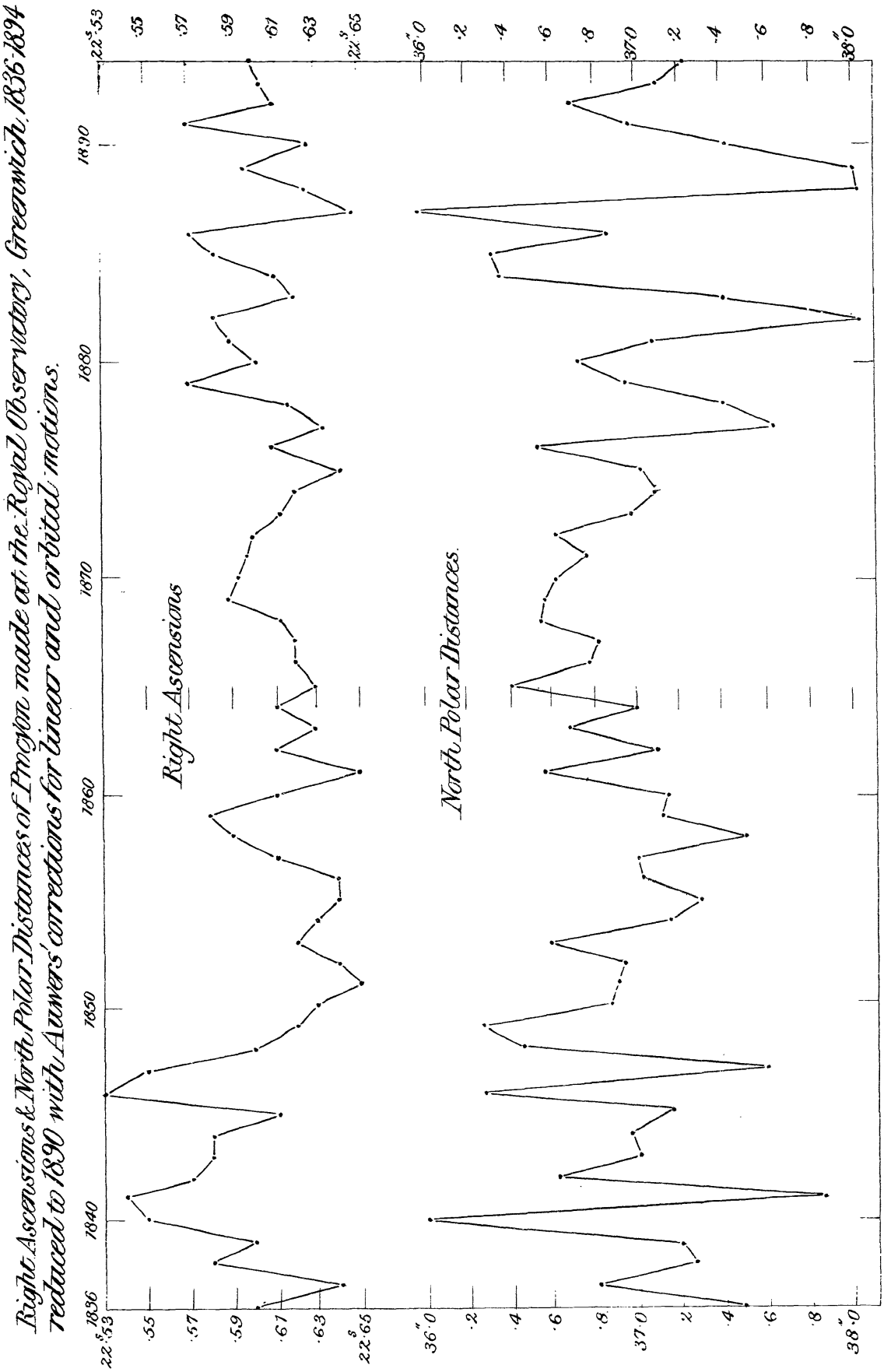


DIAGRAM (7)

Year and Fraction.	Mean Right Ascension.	No. of Obs.	Adopted Seconds of R.A. 1890.	Year and Fraction.	Mean North Polar Distances.	No. of Obs.	Adopted Seconds of N.P.D. 1890
	h m s		s		° ′ ″		″
1857·44	7 31 48·920	22	·680	1857·51	8 24 43·12	16	37·31
1858·41	52·030	17	·650	1858·48	52·65	13	37·99
1859·55	55·170	9	·640	1859·53	25 1·26	9	37·74
1860·37	58·380	10	·660	1860·33	10·27	5	37·86
1861·35	32 1·510	6	·690	1861·51	18·43	4	37·40
1862·67	4·600	5	·640	1862·54	28·06	6	38·05
1863·23	7·760	10	·650	1863·26	36·61	7	37·66
1864·39	10·870	14	·620	1864·42	45·83	12	38·06
1865·39	14·020	20	·630	1865·38	54·16	15	37·46
1866·31	17·150	12	32·610	1866·35	26 3·09	8	37·82
1867·41	20·280	15	·600	1867·49	12·00	9	37·83
1868·45	23·420	16	·582	1868·50	19·93	12	37·49
1869·37	26·530	16	·548	1869·44	28·75	11	37·42
1870·34	29·670	15	·544	1870·42	37·70	13	37·36
1871·39	32·810	23	·541	1871·45	46·57	20	37·39
1872·33	35·950	19	·537	1872·45	55·30	16	37·09
1873·40	39·104	10	·547	1873·44	27 4·38	11	37·30
1874·28	42·255	10	·555	1874·48	13·25	4	37·25
1875·42	45·418	10	·574	1875·53	22·01	12	37·04
1876·55	48·527	14	·539	1876·65	30·24	7	36·36
1877·41	51·697	11	·568	1877·54	40·80	9	37·33
1878·47	54·828	13	·555	1878·48	49·35	13	36·93
1879·34	57·925	6	·513	1879·38	57·72	8	36·35
1880·42	33 1·115	10	·554	1880·42	28 6·31	9	35·99
1881·49	4·254	11	·549	1881·46	15·48	6	36·21
1882·59	7·400	5	·551	1882·64	25·31	1	37·11
1883·50	10·590	6	·597	1883·46	33·63	6	36·47
1884·41	13·735	11	·598	1884·51	41·42	7	35·33
1885·27	16·865	8	·585	1885·33	50·34	6	35·29
1886·55	20·006	7	·582	1886·48	59·81	6	35·83
1887·46	23·238	12	·669	1887·52	29 8 01	8	34·97
1888·54	26·370	4	·657	1888·52	19·13	3	37·10
1889·34	29·493	3	·637	1889·48	28·18	2	37·17
1890·60	32·677	6½	·677	1890·37	36·71	8	36·71
1891·45	35·771	5½	·627	1891·36	45·35	1	36·36
1892·45	38·959	15½	·672	1892·40	54·20	9	36·20
1893·46	42·101	40	·672	1893·46	30 3·73	25	36·77
1894·45	7 33 45·245	23	·671	1894·47	84 30 13·04	25	37·06

For comparison with the last diagrams reference might be made to a paper by Mr. Burnham in the June number of *Astronomy and Astro-physics*, 1894, on the "Variable Proper Motion of *Procyon*," in which he discussed a series of measures of differences in declination between *Procyon* and two adjacent stars made during the years 1851–1890, by Otto Struve, and published in vol. x. of the Pulkova observations.

It does not seem probable that any further discussion of this series of observations, either of *Sirius* or *Procyon*, would lead to any results appreciably different from those deduced by Professor Auwers.

Note on the Measurement of Paper Prints of Stellar Photographs.

By Professor H. H. Turner, M.A., B.Sc.

1. The question of the accuracy attainable in measurements of a paper print is important, because the publication of a photograph in this form is a comparatively simple matter. The following brief notes of some experiments recently made at the University Observatory, Oxford, will, perhaps, serve to draw attention to the matter, though they are far from being a complete settlement of the question.

2. It is of course all-important that the original negative should have the *réseau* impressed upon it. If there is no *réseau* on the original negative, a glass copy can be made on which the *réseau* lines have been previously impressed, just as in preparing a plate for the telescope; and the paper prints can then be made from this copy. As a digression I would remark that there are some advantages in *not* having the *réseau* on the original negative. It can be put on the positive copy in the laboratory much more conveniently *and correctly* than on the original negative; that is to say, after examining the negative, and measuring one or two known stars, the *réseau* can be adjusted so that its lines are very nearly in the true directions for epoch 1900·0, and the centre at the proper point on the plate. Further, no stars less than the tenth mag. are obliterated on the original plate. Of course its lines would no longer be parallel to the fiducial edge of the plate. I am supposing this edge to be not used as fiducial.

3. The paper print having then a *réseau* on it, we proceed to measure the position of a star in any square of the *réseau*, for comparison with similar measures on the original negative. The print may be held between two pieces of plate glass, or wetted and squeezed to one of them. It must be viewed by reflected light, not transmitted light, as in the case of the original negative.

4. The following measures in the x coordinate were made of twelve stars on plate 703, and a platinotype print of it.